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WELDING DEVICE

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Specification

Title of the invention

WELDING DEVICE

Patent Claims

1. A welding device characterized, with regard to a welding device designed to use a shield gas, by the configuration, on the profile plane of the electric power source thereof, a cylinder chamber to which a mount platform for a cylinder and a chamber unit are attached.

2. A welding device characterized, with regard to Claim 1, by the configuration of a one touch-type joint on the nozzle of the aforementioned cylinder and on the nozzle of a pipe attached to the aforementioned chamber unit and by the configuration of a cylinder mount platform equipped with a roller capable of facilitating the mobilization of the aforementioned cylinder.

Detailed explanation of the invention

(Industrial application fields)

The present invention concerns a welding device, and in particular, it concerns a welding electric power source designed to use a shield gas and to favorably accommodate one-touch attachments & detachments of gas cylinders.

(Background of the invention)

Generally speaking, as far as a shield gas used for a welding operation is concerned, a cylinder is configured apart from a welding electric power source, whereas a depressive mechanism and a flow meter are attached to the nozzle of the gas cylinder, whereas a gas which has been

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[1] Numbers in the margin indicate pagination in the foreign text.

preliminarily depressed by the depressive mechanism is fed into a welding unit through a gas hose via the flow meter. The attachments & detachments of said depressive mechanism and flow meter require the use of a spanner or monkey wrench, and furthermore, in a case where a cylinder cannot be installed in high proximity to a welding machine, it is flawed in that the gas hose from the cylinder to the welding machine must be extended.

(Objective of the invention)

The objective of the present invention is to provide, by configuring a cylinder chamber on a welding electric power source designed to use a shield gas, a welding device to and/or from which cylinders can be attached and/or detached.

(Summary of the invention)

The present invention is characterized not only by the facilitation of the mobilization of a cylinder within a cylinder chamber by configuring said cylinder chamber within a welding electric power source but also by the facilitation of the connection of the nozzle of a gas pipe for feeding a gas into a welding unit and the nozzle of the cylinder.

(Application examples of the invention)

In the following, an application example of the present invention will be explained with /2 reference to figures. In Figure 1 through Figure 5, the mainframe (1) is a shield gas welding electric power source, and the cylinder chamber (2) is configured on the profile plane thereof. The partition panel (4) is a panel for partitioning the mainframe (1) and cylinder chamber (2). The side panel (5) is a panel that covers the side panel [sic: Presumably "profile plane"] of the cylinder chamber (2). The frontal panel (6) is a panel that covers the frontal plane of the cylinder chamber. The rear panel (7) is a panel that covers the rear plane of the cylinder chamber. The door (8) is an openable/closable door for operating the depressive mechanism (14) and the flow meter (15). The

cover (3) is a top lid that covers the mainframe (1) and the cylinder chamber (2). Attached to the cylinder chamber (2) are the platform panel (9) for mounting a cylinder, the roller (10) for facilitating the mobilization of the cylinder, the support panel (11) for supporting the former, and the chamber unit (13) linked, via the plane (12), to the platform panel (9). The chamber unit (13) is a cylinder for stocking a gas fed from the cylinder and is constituted by the nozzle (22), to which the one touch-type joint (plug) (21) is attached, the pipe (23), which is connected to the nozzle (22) for providing a gas path, the valve (24), which is connected to said pipe for enabling and terminating the feeding of the gas, the pipe (25), which is connected to said valve (24) for providing a gas path, the nozzle (26) to be connected to said pipe (25), the attachment contraption (49) for attaching the depressive mechanism (14) for the gas fed from the present chamber unit (13), the flow meter (15), which is linked to the depressive mechanism (14) for controlling the flow rate of the feed gas, and the gas hose (16) for feeding the gas into a welding unit connected to said flow meter (15). The gas hose (16) is connected & fixed to the attachment contraption (17) for attaching, to the welding unit, said gas hose for feeding the gas thereinto. The one touch-type joint (socket) (20) is attached & fixed to the nozzle (19) of the cylinder (18).

Figure 6 shows the mechanical makeup of the one touch-type joint (plug) (21), which is constituted by the cylinder (27), which forms a plug mainframe, the valve (28) for controlling the feeding of the gas and stoppage thereof, the guide axle (29) for homogeneously opening and/or closing the valve (28), the guide (30) for sliding said guide axle (29), the spring (31) for perpetuating the closed state of the valve (28), and the fixed ring (32) for perpetuating the force of said spring (31). A hole that serves as a gas path is configured on the guide (30).

Figure 7 shows the mechanical makeup of the one touch-type joint (socket) (20), which is constituted by the cylinder (33), which forms a socket mainframe, the valve (34) for controlling the feeding of the gas and stoppage thereof, the guide axle (35) for homogeneously opening and/or closing the valve (34), the guide (36) for sliding said guide axle (35), the spring (37) for perpetuating the closed state of the valve (34), the fixed ring (38) for perpetuating the force of said

spring (37), the bearing (39) for smoothly inserting the plug (21), the stopper (40) for preventing the deviation of the socket (20), the attachment/detachment ring (41), which is slid during the attachment and/or detachment of the plug [sic: Presumably "socket"] (20), the spring (42) for fixing a state where the socket (20) has become inserted into said attachment/detachment ring (41), and the stopper (43) for preventing the desorption of the attachment/detachment ring (41) from the cylinder (33). A hole that serves as a gas path is configured on the guide (36).

Figure 9 and Figure 10 each show the bottom unit of the cylinder (18), which consists of the bottom panel (44) formed in a concave shape and the handle (45) attached to said bottom panel (44).

Figure 11 and Figure 12 each show the bottom unit of the cylinder (18), which consists of the cylinder (47) attached to the outer circumference of the bottom unit and the handle (48) attached to said cylinder (47).

In Figure 1 through Figure 8, in a case where the cylinder (18) is mounted on the platform panel (9) and where the attachment/detachment ring (41) of the one touch-type joint (socket) (20) attached to the nozzle (19) is pulled toward the nozzle (19) side, the stopper (40), which is orchestrated as a ring spring biased along the outer circumferential direction, becomes expanded along the outer circumferential direction as a result of the severance of one arbitrary position of the ring, and in a case where the cylinder (27) attached to the nozzle (22) is inserted in this state and where the initial state of the attachment/detachment ring (41) is restored by the force of the spring (42), the stopper (40) becomes pressed inward and then fixed to the concave portion of the cylinder (27), as a result of which the deviation of the cylinder (27) can be prevented, and at the same time, the valve (28) and valve (34) press one another based on the repellency of the spring (31) and spring (37), as a result of which open states become each achieved in-between the valve (28) & cylinder (27) and the valve (34) & cylinder (33), and a gas fed from the cylinder (18) becomes transmitted through the respective holes configured on the guide (36) and guide (30) and then stocked within /3 the cylinder (18) past the pipe (23), valve (24), & pipe (25), and it is then fed into the welding unit via the depressive mechanism (14), flow meter (15), and gas hose (16).

In a case where the attachment/detachment ring (41) becomes pulled to the nozzle (19) side, the stopper (40) becomes expanded outward and then released from the concave portion of the cylinder (27). In a case where the cylinder (27) is pulled out in this state, the valve (28) and valve (34) become respectively pressed by the repellency of the spring (31) and spring (37), as a result of which closed states each become achieved in-between the valve (28) & cylinder (27) and the valve (34) & cylinder (33), and it becomes possible to stop the feeding of the gas from the cylinder and to prevent the back flow of the gas within the pipe (23). The attachment & detachment operations of this one touch-type joint are suitable for the feeding of a welding shield gas filled within a cylinder and for stopping the same.

It becomes possible, according to the present application example, to attach and/or detach the cylinder with ease within the welding electric power source, based on which effects of obliterating valve opening/closing tools (e.g., spanners, wrenches, etc.), of cutting the welding shield gas feeding standby time in half, and of simplifying operations can be achieved.

In a case where the welding electric power source is transported and/or mobilized, the cylinder can be simultaneously carried and mobilized with ease in a state where it remains connected.

Since the cylinder is installed within the welding electric power source, there is no need to extend the gas hose from the cylinder to the welding electric power source, and since the damage and abrasion of the gas hose can accordingly be eliminated, the safety can be improved.

Since the cylinder is installed within the welding electric power source, furthermore, there is no need to prepare a cylinder stand, based on which the space can be conserved, and a welding setup time within a narrow site can be cut in half.

In a case where the weight of the cylinder is designated at 30 kg or less and where the bottom unit of the cylinder is characterized by the structure shown in Figures 9 & 10 or Figures 11 & 12, the cylinder can be installed within the welding electric power source with ease by a single operator.

In a case where ones made of copper are each used as the pipe (23) and pipe (25), the attachment & detachment of the one touch-type joint can be further facilitated.

In a case where a roller is attached to the cylinder mount platform, furthermore, the mobilization of the cylinder can be facilitated. Incidentally, (3) and (46) in the figure are respectively an upper lid and a bottom panel.

(Effects of the invention)

The present invention obliterates the need to install a cylinder apart from a welding electric power source. Moreover, the attachment & detachment of the cylinder are facilitated, and the cylinder can be attached and/or detached with ease.

Brief explanation of the figures

Figures 1 through 12 show application examples of the present invention, where Figure 1 is a diagram which shows a frontal view of a shield gas welding electric power source, whereas Figure 2 is a diagram which shows a profile view of Figure 1, whereas Figure 3 is a diagram which shows a partial cross-sectional view of Figure 1, whereas Figure 4 is a diagram which shows a profile view of Figure 3, whereas Figure 5 is a diagram which shows a detailed view of the V area in Figure 4, whereas Figure 6 through Figure 8 are each abstract diagrams which show action principles of one touch-type joints, whereas Figure 9 is a diagram which shows a cross-sectional view of one structure of the cylinder bottom unit, whereas Figure 10 is a diagram which shows a frontal view of Figure 9, whereas Figure 11 is a diagram which shows a cross-sectional view of another structure of the cylinder bottom unit, whereas Figure 12 is a diagram which shows a cross-sectional [sic: Presumably "frontal"] view of Figure 11.

(2): Cylinder chamber; (9): Platform panel; (10): Roller; (11): Support panel.

Agent: Akio Takahashi, patent attorney

Figure 1

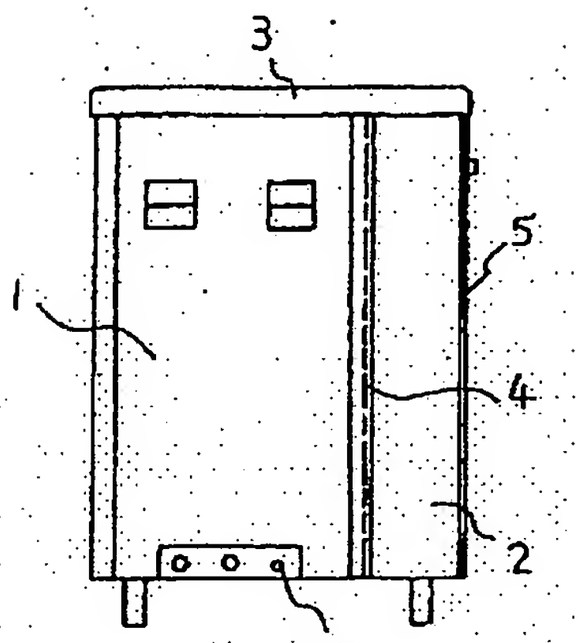

Figure 2

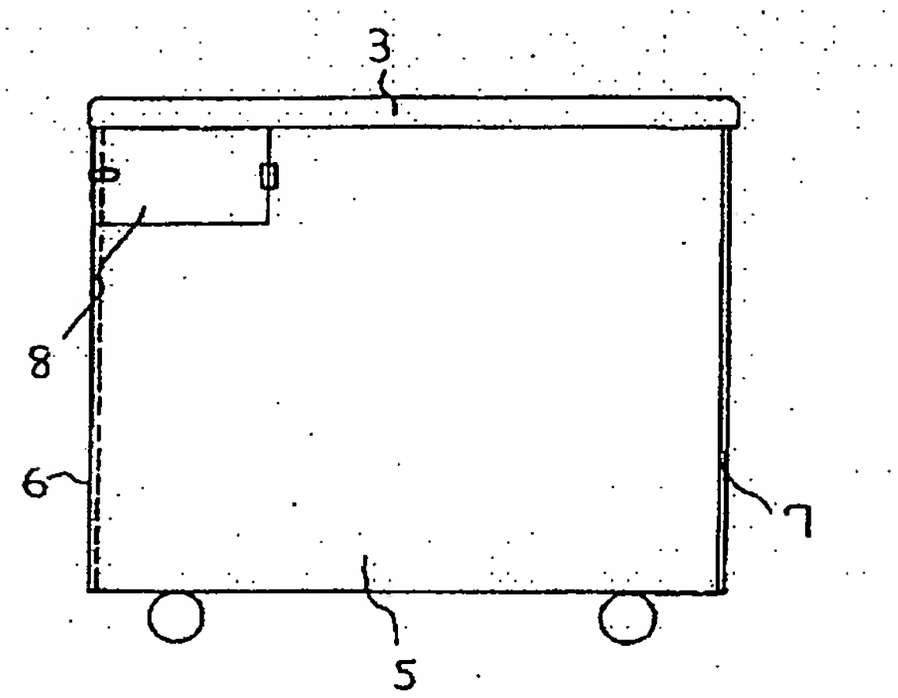

Figure 3

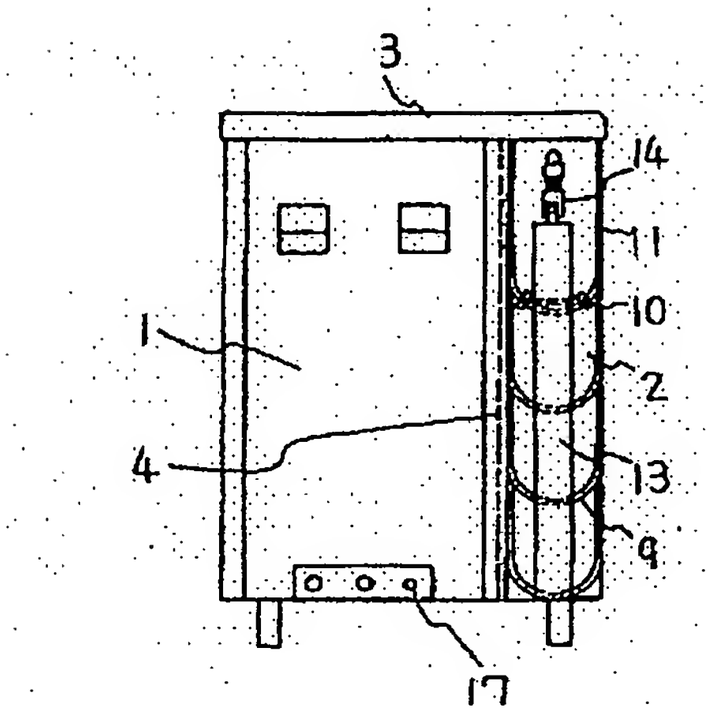

Figure 4

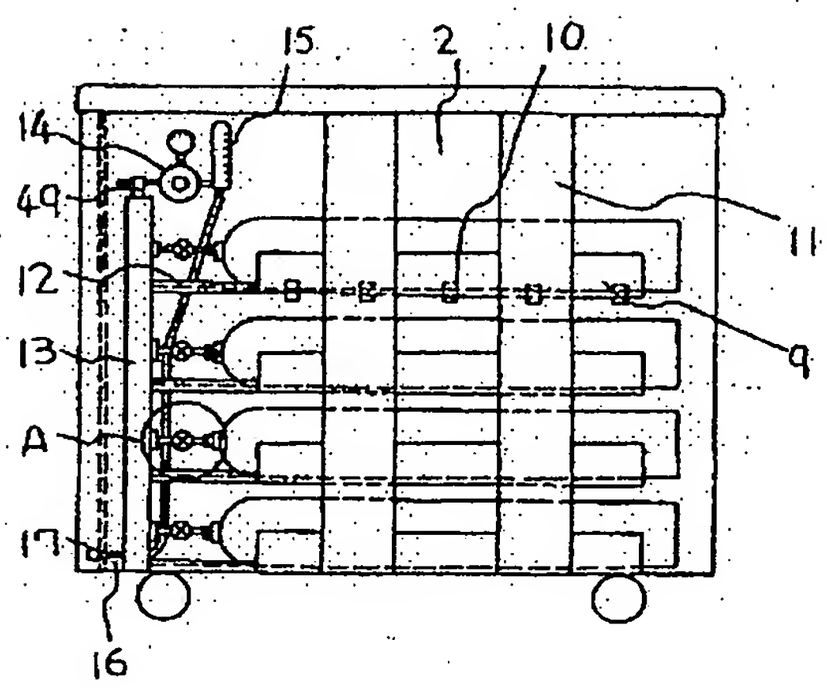

Figure 5

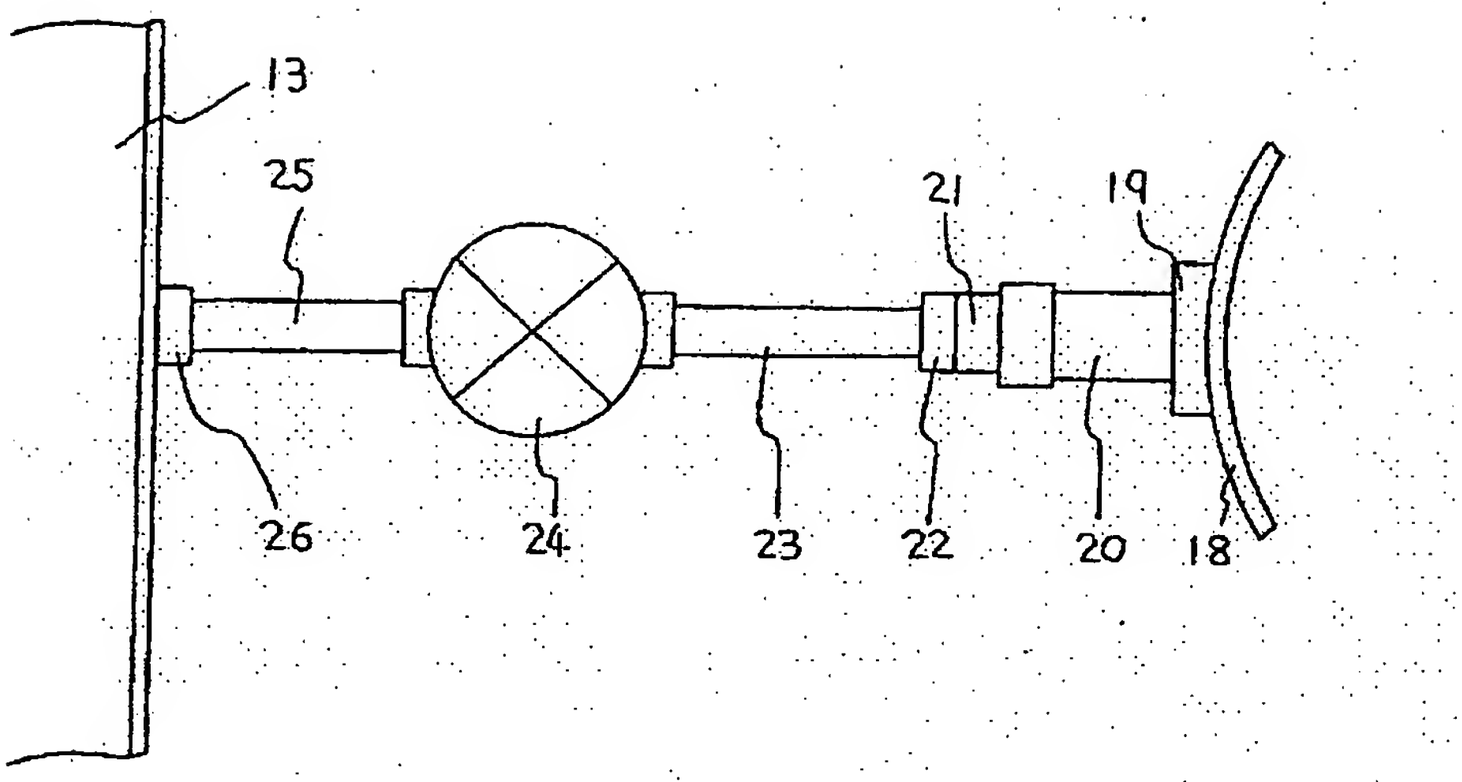

Figure 6

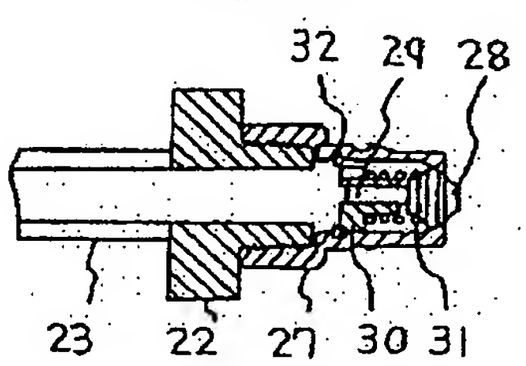

Figure 7

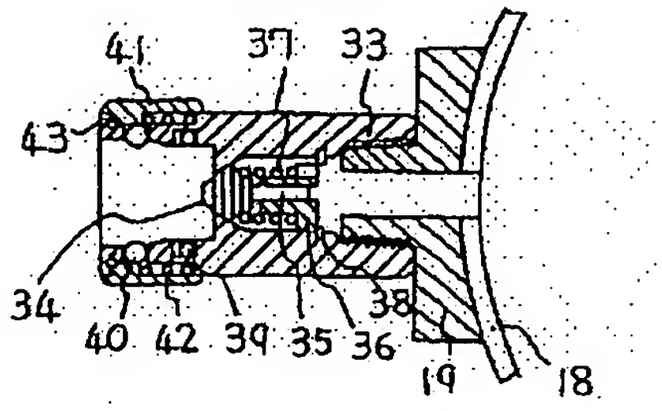

Figure 8

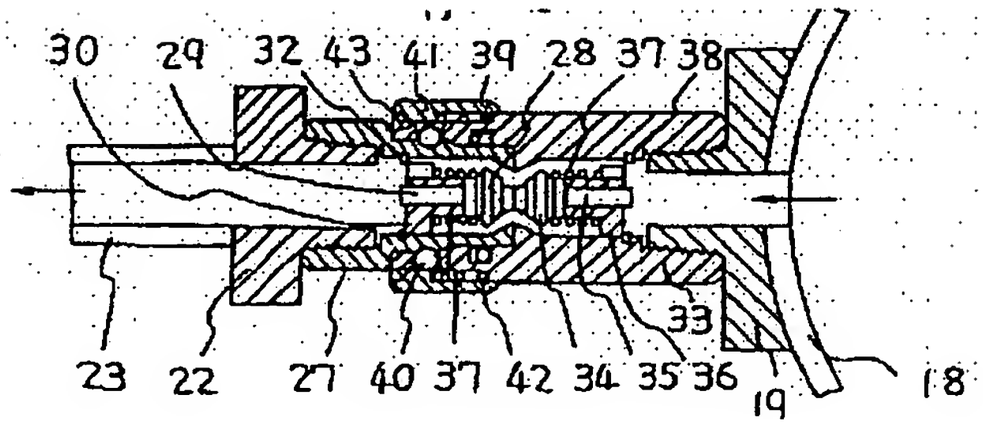

Figure 9

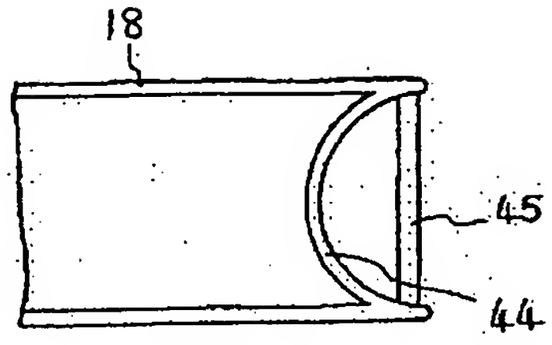

Figure 10

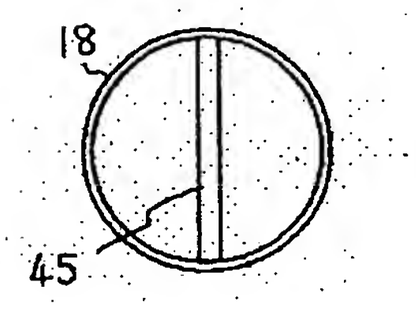

Figure 11

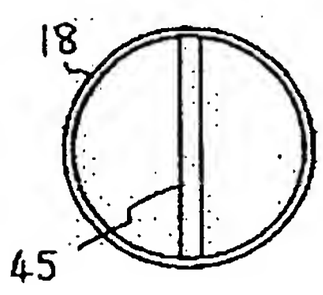

Figure 12